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Solution by H. N. Carleton, West Newbury, Mass.

Let $x = u + v$ and $y = u - v$. Substituting these values of x and y in the original equations, we have after reducing

$$2u^3 + 6uv^2 = 35 \cdots \tag{1}$$

and

$$2u^2 + 2v^2 = 13 \cdots . \tag{2}$$

Equating the values of v^2 from (1) and (2) we have

$$4u^3 - 39u + 35 = 0, \qquad \text{or} \qquad (u - \tfrac{5}{2})(4u^2 + 10u - 14) = 0.$$

Whence, $u = 5/2$, 1, or $-7/2$. Hence, corresponding values of v are $\frac{1}{2}$, $\frac{1}{2}\sqrt{22}$, and $\frac{1}{2}\sqrt{-23}$, respectively. Hence, $x = u + v = 3$, $1 + \frac{1}{2}\sqrt{22}$, or $-7/2 + \frac{1}{2}\sqrt{-23}$ and the corresponding values of y are $u - v = 2$, $1 - \frac{1}{2}\sqrt{22}$, and $-\frac{7}{2} - \frac{1}{2}\sqrt{-23}$, respectively. By virtue of the symmetry of the equations, the corresponding values of x and y may be interchanged, thus making a total of six solutions.

Also solved by H. L. Agard, Norman Anning, Grace M. Bareis, H. C. Bradley, S. M. Berg, John Biggerstaff, G. A. Bingley, W. E. Cleland, H. J. Ettlinger, C. H. Grove, Olive C. Hazlett, Alex. Knisely, C. N. Mills, J. Q. McNatt, A. R. Nauer, H. L. Olson, R. H. Reece, J. L. Riley, Emeterio Roa, M. M. Smith, H. S. Uhler, W. W. Warner, E. E. Whitford, and C. N. Wunder.

NOTES AND NEWS.

It is hoped that readers of the MONTHLY will cooperate in contributing to the genera interest of this department by sending items to the Editor-in-Chief.

Professor J. K. Lamond, of Pennsylvania College, Gettysburg, has resigned to accept a position in the engineering department of the Bell Telephone Company at Philadelphia.

Dr. C. L. E. Wolfe, of the Junior College at Santa Rosa, has been appointed instructor in mathematics at the California Institute of Technology, Pasadena.

On page 187 of *Scientific Monthly*, February, 1921, there is a full-page portrait of Professor E. H. Moore, of the University of Chicago, president of the American Association for the Advancement of Science.

At the close of the present academic year Dr. P. H. Hanus, professor of the history and art of teaching at Harvard University since 1901, will retire from active service. He was born in Silesia and came to the United States when he was four years old. He taught mathematics and science in a high school of Denver, Col. 1878–79, was professor of mathematics in the University of Colorado 1879–86 and was principal of another Denver high school 1886–90. His connection with Harvard dates from 1891. His first book, *An Elementary Treatise on the Theory of Determinants*, was published in 1886. There have been several reprints of his *Geometry in the Grammar School; an essay together with illustrative class exercises, and an outline of the work for the last three years of the grammar school* (4 + 52 pages, 1893).

John Emory Clark, professor of mathematics, emeritus, in the Sheffield Scientific School, Yale University, died at Hartford, Conn., January 3, 1921. He was born in Northampton, N. Y., August 8, 1832. He graduated A.B. from the University of Michigan where he was an assistant professor of mathematics 1857–1859. He was professor of mathematics and astronomy at Antioch College from 1866 to 1872 when he became instructor in mathematics at Yale, and after a year was appointed to the chair of mathematics, which appointment he held until he was made professor emeritus in 1901. "Professor Clark will be remembered by his former students chiefly for his kindliness. Having himself an abstract and mathematical mind, he yet could endeavor to make his subject interesting to the members of his courses. He was perhaps not a great mathematician, but he was a great teacher, with patience and kindness beyond most, and his students held him in esteem and affection." (*Yale Alumni Weekly*, January 14, 1921.)

Doctor Alexander Pell died at Bryn Mawr, Pa., January 26, 1921. He was born in Moscow, Russia, September 25, 1857. Entering the Artillery School at St. Petersburg in 1873, he graduated in 1878 as first lieutenant in the Russian artillery. He left the service in 1879 with the rank of captain and spent two years at the Institute of Civil Engineers in St. Petersburg. Forced by failure of revolutionary activities to leave his native country, he came to America in the early eighties. He was in a printing office of a Canadian village, and in a chemical factory of St. Louis, Mo., for sometime. Finally he entered The Johns Hopkins University as a graduate student in mathematics in October, 1895, was a fellow 1896–97, and received the degree of doctor of philosophy in June, 1897. His thesis entitled "On the focal surfaces of the congruences of tangents to a given surface" was published in *American Journal of Mathematics*, 1898. Dr. Pell's other mathematical papers were published in *Transactions of the American Mathematical Society*, 1900, in *Annals of Mathematics*, 1900, 1918, and in *Bulletin of the American Mathematical Society*, 1901. He was professor of mathematics and astronomy at the University of South Dakota, 1897–1908 (dean of the engineering school, 1906–1908), and assistant and associate professor of mathematics at the Armour Institute from 1908 to 1913. During the second semester of the year 1910–1911 he was incapacitated by a serious illness and Mrs. Pell acted as substitute. In one semester of 1915–1916 he was instructor in mathematics at Northwestern University. He married, for the second time, at Göttingen in 1907, Miss Anna Johnson, now associate professor of mathematics at Bryn Mawr College. A sketch of Dr. Pell's life by Professor Charlotte A. Scott was published in *The College News*, Bryn Mawr, February 9, 1921. This contains personal details not indicated above.

Johann Martin Krause, ordinary professor in the Technische Hochschule, Dresden, since 1888, died March 2, 1920. He was born June 29, 1851. His article, "Ueber Systeme von Differentialgleichungen denen vierfach periodische Functionen Genüge leisten," in the first volume of *Transactions of the American Mathematical Society*, will be recalled. He was also the author of many other articles, and of the well-known books: *Die Transformation der hyperelliptischen Functionen erster Ordnung nebst Anwendungen*, 1886; *Theorie der doppelt-periodischen Functionen einer veränderlichen Grösse*, 2 volumes, 1895–1897; and *Theorie der elliptischen Funktionen*, unter Mitwirkung von E. Naetsch, 1912.

Professors DUNHAM JACKSON, EDWARD KASNER, D. N. LEHMER, T. LEVI-CIVITA and H. L. RIETZ have been appointed associate editors of the *Bulletin of the American Mathematical Society* for 1921.

We welcome the first number of *Mathematics Teacher*, January, 1921, issued as the official organ of the National Council of Teachers of Mathematics, and devoted to the interests of mathematics in junior and senior high schools of the United States (compare *1920*, 474). It is edited by J. R. CLARK (editor-in-chief), E. R. SMITH (associate editor), J. A. FOBERG, (business manager), ALFRED DAVIS, H. D. GAYLORD, MARIE GUGLE, and J. W. YOUNG, with the cooperation of an advisory board consisting of W. H. METZLER (chairman), WILLIAM BETZ, W. E. BRECKENRIDGE, E. R. BRESLICH, J. C. BROWN, W. C. EELLS, G. W. EVANS, H. F. HART, W. W. HART, E. R. HEDRICK, H. M. KEAL, THEODORE LINDQUIST, W. A. LUBY, G. W. MYERS, J. H. MINNICK, W. D. REEVE, RALEIGH SCHORLING, H. E. SLAUGHT, D. E. SMITH, C. B. WALSH, and H. E. WEBB.

Professor FLORIAN CAJORI, professor of the history of mathematics at the University of California, addressed the Society of Sigma XI at Northwestern University, on December 13, 1920, on "Switzerland, the mother of American geodesy."

Dr. LUDWIK SILBERSTEIN, of the Eastman Kodak Company (*1920*, 474), delivered a series of six lectures at Cornell University, November 10 to Demceber 15, on the theory of relativity. An introductory lecture, on the experimental foundation for the theory, was given by Professors F. K. Richtmyer and E. R. Kennard on November 3.

We have referred elsewhere to addresses by Professors CAJORI, KARPINSKI, KELLOGG, and SMITH in joint sessions of the Mathematical Association of America, the American Mathematical Society and section "L" of the American Association for the Advancement of Science. The following papers in the history of science were also given on December 29–30, 1920, in separate sessions of Section L: "State of research in Egyptian science" by J. H. BREASTED, University of Chicago; "Early surveying and astronomical instruments in America" (illustrated) by Professor CAJORI, University of California; "Proposed periods in the history of astronomy in America" by W. C. RUFUS, University of Michigan; and "The history of physics" by Dr. H. A. BUMSTEAD, Yale University. (Dr. Bumstead died December 31, 1920).

In connection with the meeting of the American Mathematical Society in New York last December, the most notable event was the retirement of Professor F. N. COLE from his positions as secretary of the Society and as editor-in-chief of the *Bulletin*. He served as secretary for twenty-five years, and as editor-in-chief for twenty-three years, with unfailing fidelity, tact, idealism, dignity and power. But he was much more than secretary and editor; the work which he carried on almost alone for years has now been distributed among four new officers of the Society.

The high position which American mathematics occupies in the world is due in no small measure to his quiet devotion, and sacrifice of leisure which, no doubt, he often coveted for continuing research investigations. Few of the younger mathematicians know of this work. His first paper, "The potential of a shell bounded by confocal ellipsoidal surfaces," was published in *Proceedings of the American Academy of Arts and Sciences*, in 1883. "A contribution to the theory of the general equation of the sixth degree" (his Harvard doctor's thesis), and a sixteen-page article, "Klein's Ikosaeder," appeared in *American Journal of Mathematics*, during the period 1885–87 that he was lecturer in mathematics at Harvard. This was just after his return from Germany "aglow with enthusiasm which Felix Klein inspired in his students," when he initiated at Harvard a new era[1] in graduate instruction in mathematics. While instructor and assistant professor at the University of Michigan, 1888–95, he published as follows: his English translation of Netto's *The Theory of Substitutions and its Applications to Algebra* (Ann Arbor, 1892); "The diurnal variation of barometric pressure," *Bulletin, U. S. Weather Bureau*, 1892; "On a simple group," *Mathematical Papers read at the International Mathematical Congress . . . 1893*, (New York, 1896); "The linear functions of a complex variable," *Annals of Mathematics*, 1890, 56 pages; "On rotations in space of four dimensions," *American Journal af Mathematics*, 1890; and a number of articles, one in collaboration with J. W. Glover, dealing with questions in the theory of groups. These included three in *American Journal of Mathematics*, two in *Bulletin of the New York Mathematical Society*, and two in *Quarterly Journal of Mathematics*.

He commenced to lay the foundation of the great monument of his life work shortly after his appointment in 1895 as professor of mathematics at Columbia University. His papers since that time have been: "On the factoring of large numbers" (where the often quoted factors of Mersenne's number, M_{67}, are given) in *Bulletin of the American Mathematical Society*, 1903; "The groups of order p^3q^β" in *Transactions of the American Mathematical Society*, 1904; and the memoir in collaboration with Professors White and Cummings, to which we have already referred (*1919*, 304), in *Memoirs of the National Academy of Sciences*, 1919. Some personal details regarding Professor Cole's life may be found in *National Cyclopædia of American Biography*, volume 13, 1906.

At the close of its sessions the Society testified to its appreciation of their retiring secretary and of his services, by the presentation of an address and a purse containing several hundred dollars.

Another event of the sessions, report on which will be of general interest, was the acceptance by the Council of the Society of the Bôcher Memorial Fund to be held in trust, the income to be employed for the advancement of mathematical science. The council appointed a committee consisting of Professors W. F. OSGOOD (chairman), T. S. FISKE, C. N. HASKINS, O. D. KELLOGG, and E. B. VANVLECK to consider the most appropriate use to which the income of the Fund could be devoted.

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[1] For details the reader may, elsewhere in this MONTHLY (*1919*, 263), consult the report of a paper by Professor Osgood.

The following four American doctorates in mathematics should be added to the lists already published (*1920*, 440 and *1921*, 44), making a total of twenty-two conferred in 1919–20: H. J. ETTLINGER, Harvard: "I. Existence theorems for the general real self-adjoint linear system of the second order. II. Oscillation theorems for the real self-adjoint linear system of the second order"; G. M. ROBISON, Cornell: "Divergent double sequences and series"; BIRD M. TURNER, Bryn Mawr: "Plane cubics with a given quadrangle of inflexions"; W. L. G. WILLIAMS, Chicago: "Fundamental systems of formal modular seminvariants of the binary cubic."

The *Bulletin of the American Mathematical Society* has published the following note (compare *1920*, 340): "Professor J. H. TANNER, of Cornell University, and Mrs. TANNER have given to the trustees of that institution fifty thousand dollars to establish a mathematical institute under the following stipulations. The money is to be allowed to accumulate without diversion for seventy-five years. At the end of that time one professor shall be appointed, whose duty it shall be to begin the formulation of plans for the proposed institute. At the end of each of the four succeeding periods of five years one or more additional professorships shall be established, the incumbents to collaborate in the same plans. The stipends of these professors shall be paid from the fund, but no other demands shall be made upon it until one hundred years from the date of the deed of gift (June, 1920), from which time the income of the entire sum shall be devoted to the maintenance of the institute; half of the expenditure of each year is to be applied to research in the mathematical sciences."

The National Research Council requested Professor H. L. RIETZ, of the University of Iowa, to call together a small group for a preliminary conference to discuss the desirability of a committee of the Council in the field of applications of mathematics to statistics, and to make appropriate recommendations. The group consisted of Professor J. W. GLOVER, Professor E. V. HUNTINGTON, Professor RAYMOND PEARL, and Professor W. M. PERSONS and the conference was held in Washington, January 21–22.

The Council of the American Association for the Advancement of Science chose Professor E. H. MOORE, of the University of Chicago, as president for the coming year. He will preside at Toronto in 1921 and deliver his address at Boston in 1922. *Science* refers to this "acknowledged leader of American mathematics": then adds: "It is now many years since that science which is fundamental to all others has supplied a president to the association, and it is fortunate that a representative could be selected with the unanimous approval of all mathematicians." Professor W. D. CAIRNS and Professor G. A. MILLER were appointed members of the Council of the Association, and Executive Committee, respectively. In Section A, Professor OSWALD VEBLEN was elected vice-president and Professor W. H. ROEVER secretary for 1921.

We have already announced (*1921*, 44) the award by the Royal Society to Professor G. H. HARDY, of Oxford University, of a Royal Medal. Sir J. J. Thomson's statement in making the award is as follows (*Proceedings of the Royal Society*, series A, January 3, 1921):

> "Prof. Hardy is well known both in this country and on the Continent for his researches in pure mathematics, particularly in the analytic theory of numbers and allied subjects. Immediately after taking his degree at Cambridge he engaged in a series of researches on the theory of functions of a real variable, from which results of the greatest importance and generality were obtained, at first by himself alone and later in collaboration with Mr. J. E. Littlewood. Perhaps his most remarkable work is his more recent work on Partitions, carried out in collaboration with the late Mr. S. Ramanujan, especially a paper on "Asymptotic Formulæ in Combinatory Analysis" (*Proc. Lond. Math. Soc.*), in which a system of approximations are obtained for $p(n)$, the number of unrestricted partitions of n and associated functions. The ingenuity of the method and the accuracy of the results are equally remarkable. For p (200) the authors' approximate formula gives the value 3,972,999,029,388.004, from which the true value differs by 0.004, an error of 1 in 10^{15}.
>
> Among the more important researches of which Prof. Hardy is sole author may be mentioned papers on Dirichlet's Divisor Problem, on the representation of numbers as the sum of n squares, on the roots of the Riemann ζ-function, and on non-differentiable functions."

A similar award was made in 1919 to J. H. JEANS (*1920*, 46). Two Royal Medals are awarded each year. They were "instituted by George IV., and are awarded annually for the two most important contributions to science published in the British dominions not more than ten years nor less than one year from the date of the award."

There is a special call for copies of the MONTHLY for May, 1915. By an error in printing, the cover for that month read April, 1915, although the inside front page was marked correctly. Slips to be pasted over the incorrect date were sent out the next month, but a number of subscribers did not attend to this matter. As a result many libraries lack this one issue to complete their files. If anyone is willing to part with copies of the MONTHLY for May, 1915, such copies will be paid for by the Secretary of the Association at the rate of one dollar per copy, and will then be available for those desiring to complete their files. The same price will be paid for a limited number of copies for June and November, 1895, in volume 2.